

FIG.2A

MIDDLEMAN SERVER IP ADDRESS 138.10.0.1

FIG.2B

CONTENT NAME CAPACITY
CONTENT A 57.6Mbyte
CONTENT B 28.8Mbyte

FIG.2C

	134.30.0.1	
1/0/1000	12:00	
7, 0, 1000	10:00	
	64K	
	130.10.0.2	
	CONTENT A	
	138.10.0.1	
	α1	
	1/0/1000	138.10.0.1 CONTENT A 130.10.0.2 64K 21

FIG.3A

SS			_				
CLIENT MANAGEMENT SERVER IP ADDRESS	V O OV OCT	1.0.04.001	7002007	132.30.0.4	A O O A A C L	104.40.0.4	
POLICY SERVER IP ADDRESS		130.40.0.3		132.50.0.3		132.40.0.3	
NETWORK ADDRESS		130 0 0 0 / 9		139000/0	0 /0.0.0.0	132000/9	0.0.0.0
							_

							LACTE A VOTOR	
ORE	DER	POLICY SERVER IP	USER IP ADDRESS	SERVER IP	REQUESTED BAND (bps)	ORDER POLICY USER IP RECHER BAND START DATE END DATE ADDRESS AND TIME ADDRESS AND TIME ADDRESS AND TIME ADDRESS	KESEKVA LION END DATE AND TIME	PORT IP ADDRESS
ž	- -	ADDRESS		201		1/0/1000	1/0/1006	
8	8 1	134.40.0.3	130.10.0.2	134.40.0.3 130.10.0.2 136.10.0.1	64K	10:00	12:00	134.30.0.1
						1/0/1000	1/0/1006	
FIG.35	82	132,50.0.3	130.10.0.2	132,50.0.3 130.10.0.2 136.10.0.1	64K	10:00	12:00	132.40.0.1
						1/0/1000	2001/9/1	,
9	8.3	130,40.0.3	130.10.0.2	130,40,0,3 130,10,0,2 136,10,0,1	64K	10:00	12:00	130.30.0.1

RESERVATION RESULT			
POLICY SERVER IP ADDRESS	134.40.0.3	132.50.0.3	130.40.0.3
ORDER RECEPTION NUMBER	β1	β2	β3
ORDER -ING NO.	α1		
CONTENT SERVER TO A DIDRESS	136.10.0.1		

FIG.3C

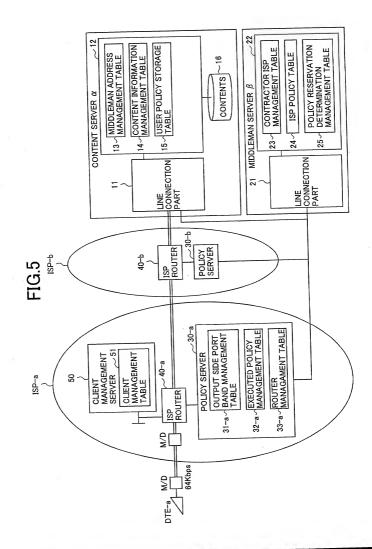
FIG.4A

							_				_	
			22-24	2		Ž	=	N2.		2		
1)S)		20-22	2	ž.	2	Ä	15M	5	>		
1,00	מאומ		18-20	1 M	ž	2	M.	1 EM 1 5M 1 5M		2		
	7 7 7		16-18	N	Ξ		Ξ	1 EM	E.	MI	=	
1	VATIO		14-16	1	Σ		Σ	4 514	MC.	N	2	
	RESER		12-14	;	IMI IMI MI		Σ	7	1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M	7	IM IM IM	
	:ACH F		10-12	1	Σ		≥	1	Mc.I	7117	Ξ	
	LINE BAND LEFT FOR EACH RESERVATION PERIOD (bps)		8-10	1	≥	1	≥	1	Š.		Σ	
			8-9		≥		2	1	1.5M		Σ	
			9-4		≥		2		1.5M		≥	
			2-4		M M		2		1.5M		M M	
			0-2		¥		M	- 1	1.5M		2	
	H.	BAND	ű.	(sda)	1 1.4	Ξ	144	IMI	1.5M		2	
		PORT	Š.		ç	2	1	Ξ	D14	-	516	2
	ROUTER NO.				2	-	욷	70	2	70	2	

FIG.4B

		-	
OUTPUT PORT NO.	010	2	
ROUTER OUTPUT VIRTUAL PORT IP NO.	194 100 5	104,10.0.0	
ORDER NO. A	7	l d	
DLEMAN ERVER IP IDRESS		138.10.0.1	
RESERVATION SI END DATE AND TIME	9001/0/1	12:00	
RESERVATION START DATE AND TIME	1/0/1000	10:00	2010
REQUESTED BAND (bps)		64K	
POLICY DESTINATION TRANSMITTER REQUESTED RESERVATION IP DIP DATE (5ps) ADDRESS (5ps)		136,10.0.1	
DESTINATION IP ADDRESS		130 1002	100:00
POLICY NO.		-	-

ROUTER VIRTUAL IP ADDRESS	134.10.0.5				134.50.0.5		
ROUTER PORT IP ADDRESS	134.10.0.1	134.20.0.1	134.30.0.1	134.40.0.1	134.50.0.1	134.60.0.1	134 20 0 2
			FIG 4C)			



USER IP ADDRESS	CONNECTION BAND (bps)
130.10.0.2	64K
130.20.0.2	128K
130.10.0.3	

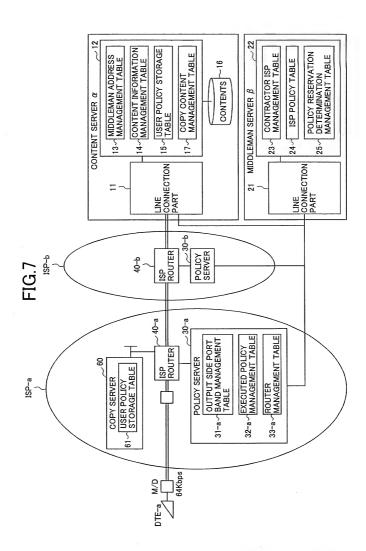
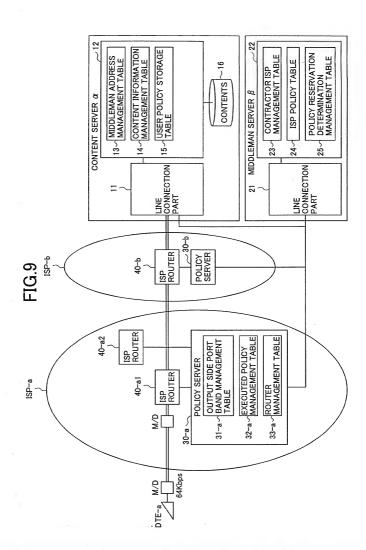


FIG.8A

NETWORK ADDRESS COP" 130.00.0/9 132.0.0.0/9	COPY SERVER IP ADDRESS	130.40.0.2	132.50.0.2	134.40.0.2	
	Ť	130.0.0/9	132.0.0/9	134.0.0.0/9	

ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	
ROUT IP A (TRAC	
RESERVATION END DATE AND TIME	2001/9/1 12:00
REQUESTED RESERVATION RESERVATION BAND START DATE END DATE (bps) AND TIME AND TIME	2001/9/1 10:00
REQUESTED BAND (bps)	64K
USER IP ADDRESS	130.10.0.2
CONTENT	138.10.0.1 CONTENT A 130.10.0.2
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
ORDERING NO.	α1

FIG.8B



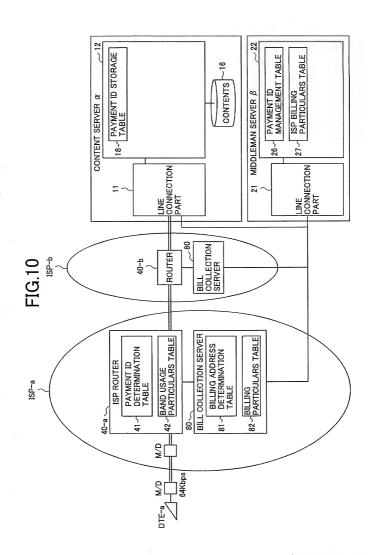


FIG.11A

PAYMENT ID β1

FIG.11B

CONTENT SERVER IP ADDRESS 136.10.0.1 140,10.0.1 PAYMENT ID β1 β2

aaa

ISP SERVER IP ADDRESS

134.40.0.2 134.40.0.2

PAYME ID	β 1	β2			
	FIG.12C				
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1	138.10.0.1			
PAYMENT ID	β1	82			
FIG.12A					

PAYMENT ID	β1	z θ	
i	FIG.12C		
AAN ? IP SS).1	0.1	

	AMOUNT BILLED (YEN)	PAYMENT ID	MOUNT PAYMENT DESTINATION IN ID ID ID ADDRESS	DESTINATION PORT NO.	RESERVED BAND (bps)	USAGE USAGE END START DATE DATE AND AND TIME TIME	USAGE END DATE AND TIME
FIG.12B	aaa	β1	130.20.0.2	10	64K	2001/9/1 9:00	2001/9/1
	qqq	β1	130.10.0.2	30	64K	2001/9/1 10:00	2001/9/1 12:00
	000	β1	132.20.0.2	20	64K	2001/9/1	2001/9/1

USAGE END DATE AND TIME	2001/9/1 11:00	2001/9/1 12:00
USAGE START DATE AND TIME	2001/9/1 9:00	2001/9/1 10:00
RESERVED BAND (bps)	64K	64K
DESTINATION PORT NO.	10	30
PAYMENT DESTINATION DISTRIBUTION DISTRIBUTION DISTRIBUTION DISTRIBUTION DESTINATION DISTRIBUTION	130.20.0.2	130.10.0.2
PAYMENT ID	В	В
	FIG.12D	

CONTENT PROVIDER a MIDDLEMAN B SERVER & (ORIGINAL) Ø SERVER 1.5Mbps 256Kbps COPY SERVER Sc P15) P12) 1Mbps CLIENT MANAGE -MENT SERVER Ko P16) (P13) ROUTER Re 11 ROUTER Rd POLICY SERVER Po P10) P14) ISP-c 1Mbps 1.5Mbps SERVER Sb COPY P8 FIG.13A Ы MANAGE -MENT SERVER Kb 128Kbps CLIENT ROUTER Rb 6 DTE-c P6 POLICY SERVER Pb P5 1.5Mbps COPY SERVER Sa B3 128Kbps MANAGE -MENT SERVER Ka DTE-b CLENT P4 ROUTER Ra P2 POLICY SERVER Pa <u>_</u> ISP-a CONSTANT CONNECTION 64Kbps DTE-a

A THE TANK AND AND THE TANK THE THIRD THE TANK THE THIRD THE

FIG.13B

		_								_		
PORT IP ADDRESS	134.10.0.1	134.20.0.1	134.30.0.1	134.40.0.1	134.50.0.1	134.60.0.1	134.20.0.2	134.10.0.5	134.50.0.5	134.40.0.3	134.40.0.4	134.40.0.2
PORT	P10	P11	P12	P13	P14	P15	P16	1	1	1	١.	-
ISP-c	132.10.0.1 ROUTER Ro				ROUTER Rd			VIRTUAL IP ADDRESS (Rc)	VIRTUAL IP ADDRESS (Rd)	SERVER Pc	SERVER Kc	SERVER Sc
PORT IP ADDRESS	132,10,0,1	132.20.0.1	132.30.0.1	132.40.0.1	132.50.0.1	132.10.0.5	132.50.0.3	132.50.0.4	132.50.0.2			
PORT	P5	9d	Ь7	P8	Р9	1	1	ı	ı			
ISP-b	130.10.0.1 ROUTER Rb					VIRTUAL IP ADDRESS (Rb)	SERVER Pb	SERVER Kb	SERVER Sb			
PORT IP ADDRESS	130.10.0.1	130.20.0.1	130.30.0.1	130.40.0.1	130.10.0.5	130.40.0.3	130.40.0.4	130.40.0.2				
PORT	PI	P2	Р3	P4	-	1	ı	1				
ISP-a	ROUTER Ra				VIRTUAL IP ADDRESS (Ra)	SERVER Pa	SERVER Ka	SERVER Sa				
IP ADDRESS	130.10.0.2	130.20.0.2	132.30.0.2	136.10.0.1	138.10.0.1							
TERMINAL/ SERVER	DTE-a	DTE-b	DTE-c	SERVER a	SERVER B							

FIG.14A	
ORDERING NO.	
MIDDLEMAN SERVER IP ADDRESS	
CONTENT	
USER IP ADDRESS	
REQUESTED BAND (bps)	
RESERVATION START DATE AND TIME	
REQUESTED RESERVATION RESERVATION BAND START DATE END DATE (bps) AND TIME AND TIME	
ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	

FIG.14B

MIDDLEMAN SERVER IP ADDRESS 138.10.0.1

FIG.14C

CONTENT NAME CAPACITY
CONTENT A 57.6M
CONTENT B 28.8M

FIG.15A

CLIENT MANAGEMENT SERVER IP ADDRESS	130.40.0.4	132.50.0.4	134.40.0.4	
POLICY SERVER IP ADDRESS	130.40.0.3	132.50.0.3	134.40.0.3	
NETWORK ADDRESS	130.0.0/9	132.0.0.0/9	134.0.0.0/9	

FIG.15B

ROUTER PORT IP ADDRESS	
ORDER POLICY USER IP SERVER IP BAND START DATE END DATE PORT IP PORT IP ADDRESS ADDRESS (bps) AND TIME AND TIME ADDRESS ADDRESS	
RESERVATION START DATE AND TIME	
REQUESTED BAND (bps)	
CONTENT SERVER IP ADDRESS	
USER IP ADDRESS	
POLICY SERVER IP ADDRESS	
ORDER RECEPTION NO.	

- 2C	
FIG.1	

RESULT	
RESERVATION RESULT	
POLICY SERVER IP ADDRESS	
ORDER RECEPTION NUMBER	
ORDER -ING NO.	
CONTENT SERVER IP ADDRESS	

	24	Ι.	Γ.
	22-	1	
(g)	20-22	ı	ı
) Q(18-20	ı	ı
I PERI	16-18	ı	ı
/ATTON	14-16	ı	ı
KESER/	12-14	1	ī
ACH F	10-12	ı	ı
LINE BAND LEFT FOR EACH RESERVATION PERIOD (bps)	0-2 2-4 4-6 6-8 8-10 10-12 12-14 14-16 16-18 18-20 20-22 22-24	ı	1
) LEFT	8-9	1	ı
E BANI	4-6	1	ı
l l	2-4	-	ı
	0-2	1	ı
LINE	FOR USE (bps)	-	
PORT	NO.	F	P2
i i	שווחסא	Ra	Ra
	FIG.16A		

	22-24	1.5M	ı
(80	20-22	1.5M	ı
dq) Q0	18-20	1.5M	ı
N PERI	16-18	1.5M	1
VATIO	14-16	1.5M	1
RESER	12–14	1.5M	ı
LINE BAND LEFT FOR EACH RESERVATION PERIOD (bps)	0-2 2-4 4-6 6-8 8-10 10-12 12-14 14-16 16-18 18-20 20-22 22-24	1.372M 1.5M 1.5M 1.5M	ı
T FOR	8-10	1.5M	ı
ID LEF	8-9	1.5	1
E BAN	4-6	1.5M	_
S	2-4	1.5M 1.5M 1.5M	_
	0-2	1.5M	_
BAND	FOR USE (bps)	1.5M	ı
PORT	Ñ.	P5	P6
LIN PORT BAN	בוויסטו	윤	윤
	FIG 16B	5	

	PORT	PORT	LINE		I	LINE BAND LEFT FOR EACH RESERVATION PERIOD (bps)	D LEFT	FOR	EACH F	ZESER!	VATIO	N PERI	OD (bg	(8)	
	מו מו	NO.	-	0-2	2-4	4-6	8-9	8-10	10-12	12-14	14-16	16-18	18-20	20-22	22-24
FIG 160	Re	P10	M1	1M	1M	MI	M	1M	M	Σ	ĭ	Ξ	Σ	≥	Σ
5	R	P11	MI	1M	1M	IM IM IM IM IM IM IM IM	IM.	1M	M	Ξ	Ξ	Σ	Σ	₽	Σ
	Rd	P14	1.5M	1.5M	1.5M	1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M	1.5M	1.5M	1.5M	1.5M	1.5M	1.5M	1.5M	1.5M	1.5M
	Rd	P16	IM	M	IM	IM	Σ	1M	¥	1M	Ψ	Ψ	Σ	₹	≥

FIG.17A

OUTPUT PORT NO.	
ROUTER OUTPUT IP PORT IP NO.	
ORDER RECEPTION NO.	*
IDDLEMAN SERVER IP ADDRESS	
RESERVATION END DATE AND TIME	2001/9/1 12:00
POLICY DESTINATION TRANSMITTER REQUESTED RESERVATION RESERVATION RESERVATION NO. ADDRESS (bps) AND TIME AND TIME AND TIME	2001/9/1 10:00
REQUESTED BAND (bps)	128K
TRANSMITTER IP ADDRESS	132.30.0.2
DESTINATION IP ADDRESS	130.20.0.2
POLICY NO.	-

FIG.17B

OUTPUT PORT NO.	
ROUTER OUTPUT PORT IP NO.	
ORDER ECEPTION NO.	
MIDDLEMAN SERVER IP ADDRESS	
RESERVATION END DATE AND TIME	2001/9/1
RESERVATION START DATE AND TIME	2001/9/1
REQUESTED BAND (bps)	128K
POLICY DESTINATION TRANSMITTER REQUESTED RESERVATION RESERVATION SERVER NO. ADDRESS (Des) (Des) AND TIME ADDRESS AND TIME ADD	130.20.0.2
DESTINATION IP ADDRESS	132.30.0.2
POLICY NO.	-

FIG.17C

OUTPUT PORT NO.	
ROUTER OUTPUT VIRTUAL PORT NO.	
ORDER RECEPTION NO.	
IDDLEMAN SERVER IP ADDRESS	
RESERVATION END DATE AND TIME	
POLICY DESTINATION TRANSMITTER REQUESTED RESERVATION RESERVATION RESERVATION NO. ADDRESS ADDRESS (bps) AND TIME AND TIME	
REQUESTED BAND (bps)	
TRANSMITTER IP ADDRESS	
DESTINATION IP ADDRESS	
POLICY NO.	

FIG.18A

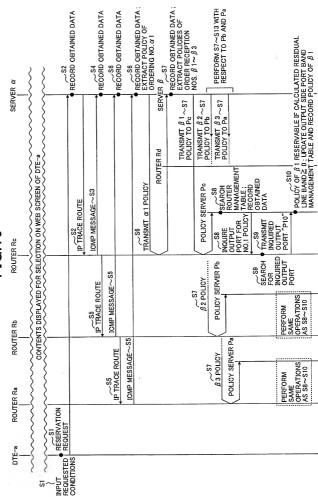
ROUTER PORT IP ADDRESS	ROUTER VIRTUAL IP ADDRESS
130.10.0.1	130.10.0.5
130.20.0.1	
130.30.0.1	
130.40.0.1	

FIG.18B

ROUTER PORT IP ADDRESS	VIRTUAL IP ADDRESS
132.10.0.1	132.10.0.5
132.20.0.1	
132.30.0.1	
132.40.0.1	
132.50.0.1	=

FIG.18C

ROUTER PORT IP ADDRESS	ROUTER VIRTUAL IP ADDRESS
134.10.0.1	134.10.0.5
134.20.0.1	
134.30.0.1	
134.40.0.1	
134.50.0.1	134.50.0.5
134.60.0.1	
134.20.0.2	



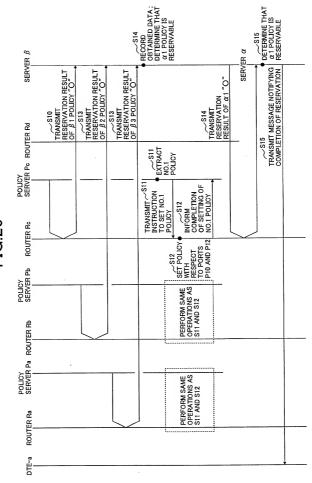
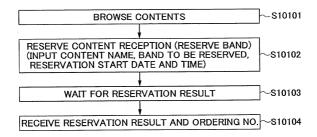
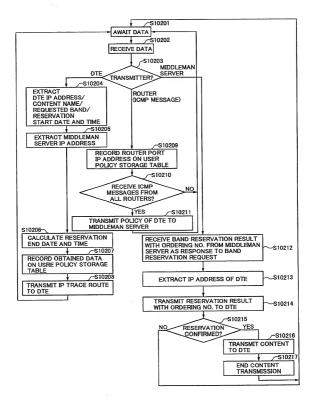
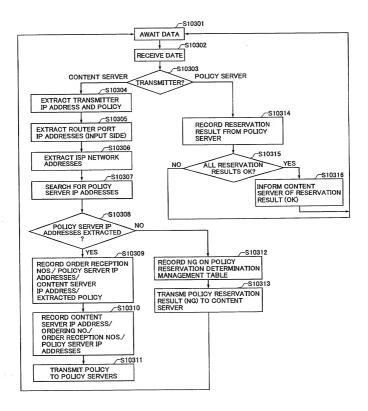


FIG.21







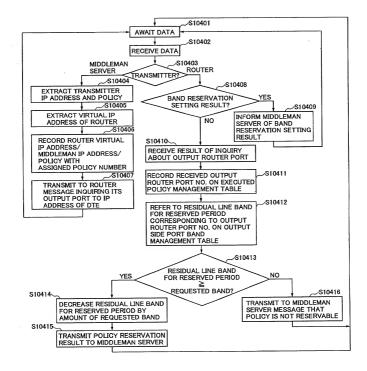
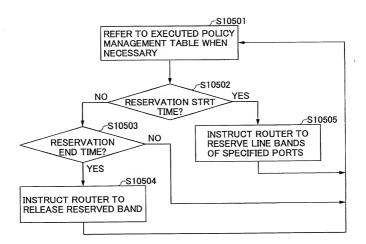
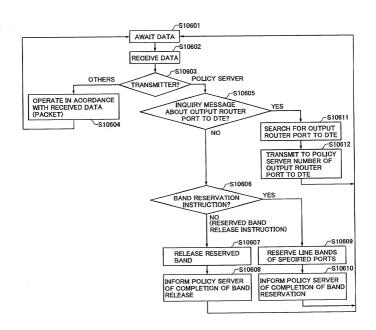


FIG.25





DATA	(REQUESTED CONDITIONS)
TRANSMITTER IP ADDRESS	130.10.0.2
DESTINATION IP ADDRESS	136.10.0.1
V 26 OI	19.2/A

	MIDDLEMAN SERVER IP ADDRESS	130.10.0.1
_	_	
	FIG.27B	

CAPACITY	57.6M	28 8M
CONTENT NAME	CONTENT A	CONTENT B
	FIG.27C	

$$FIG.27D \left\{ \begin{array}{l} \text{(a) 57.6 (Mbyte)} \times \frac{8 \text{(bit)}}{64 \text{(Kbps)}} = 7,200 \text{(sec)} \\ \text{(b) "2001/9/1 10:00"+"7,200 (sec)"} \\ \text{(c) "2001/9/1 12:00"} \end{array} \right.$$

MIDDLEMAN SERVER IP ADDRESS
82



	ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	134.30.0.1			
	RESERVATION END DATE AND TIME	2001/9/1 12:00			
DATA	RESERVATION START DATE AND TIME	2001/9/1 10:00	DATA		DATA
IRANSMITTER IP ADDRESS 134.30.0.1	REQUESTED BAND (bps)	64K	TRANSMITTER IP ADDRESS 132.40.0.1		TRANSMITTER IP ADDRESS 130.30.0.1
	USER IP ADDRESS	130.10.0.2			
DESTINATION IP ADDRESS 136.10.0.1	CONTENT	CONTENT A 130.10.0.2	DESTINATION IP ADDRESS 136.10.0.1	·	DESTINATION IP ADDRESS 136.10.0.1
	MIDDLEMAN SERVER IP ADDRESS	138.10.0.1	FIG.28C		
FIG.28A	ORDERING NO.	α1	FIG.		FIG.28D
	FIG.28B				

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ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	134.30.0.1	132.40.0.1		ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	134.30.0.1	132.40.0.1	130.30.0.1
RESERVATION END DATE AND TIME	2001/9/1 12:00			RESERVATION END DATE AND TIME	2001/9/1 12:00		
RESERVATION START DATE AND TIME	2001/9/1 10:00			RESERVATION START DATE AND TIME	2001/9/1 10:00		
REQUESTED BAND (bps)	64K			REQUESTED BAND (bps)	64K		
USER IP ADDRESS	130.10.0.2			USER IP ADDRESS	130.10.0.2		
CONTENT	CONTENT A 130.10.0.2			CONTENT	CONTENT A 130.10.0.2		
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1			MIDDLEMAN SERVER IP ADDRESS	138.10.0.1		
ORDERING NO.	α1			ORDERING NO.	α1		
v	FIG.29A				FIG.29B		

 $(\alpha 1 \text{ POLICY})$ DATA TRANSMITTER IP ADDRESS 136.10.0.1 DESTINATION IP ADDRESS 138.10.0.1 FIG.29C

CLIENT MANAGEMENT SERVER IP ADDRESS 130.40.0.4 132.50.0.4 134.40.0.4 POLICY SERVER IP ADDRESS 130.40.0.3 132.50.0.3 134.40.0.3 **NETWORK ADDRESS** 130.0.0.0/9 132.0.0.0/9 134.0.0.0/9 130.30.0.1 134,30.0.111132.40.0.1 FIG.30A

FIG.30B

N RESERVATION ROUTER END DATE PORT IP AND TIME ADDRESS	2001/9/1 134,30.0.1 2001/9/1 132,40.0.1
D RESERVATION RESE START DATE EN AND TIME AN	2001/9/1 10:00 2001/9/1 10:00
REQUESTE BAND (bps)	64K 64K
CONTENT SERVER IP ADDRESS	136.10.0.1
USER IP ADDRESS	34.40.0.3 130.10.0.2 32.50.0.3 130.10.0.2
SERVER IP ADDRESS 4	134,40,0,3
ORDER RECEPTION NO.	β1 β2

SERVER -ING IP ADDRESS NO.
136.10.0.1 a

FIG.31B

(0)			
ROUTER PORT IP ADDRESS	134.30.0.1	132.40.0.1	130.30.0.1
RESERVATION END DATE AND TIME	2001/9/1 12:00	2001/9/1 12:00	2001/9/1 12:00
IR POLICY USER IP SERVER IP SERVER IP SERVER IP SERVER IP ADDRESS ADDRESS (bps) AND TIME AND TIME ADDRESS	2001/9/1 10:00	2001/9/1 10:00	2001/9/1 10:00
REQUESTED BAND (bps)	64K	64K	64K
CONTENT SERVER IP ADDRESS	34.40.0.3 130.10.0.2 136.10.0.1	136.10.0.1	136.10.0.1
USER IP ADDRESS	130.10.0.2	132.50.0.3 130.10.0.2 136.10.0.1	130.40.0.3 130.10.0.2 136.10.0.1
POLICY SERVER IP ADDRESS	134.40.0.3	132.50.0.3	130.40.0.3
ORDER RECEPTION NO.	β1	β2	β3

DATA	(β 1 POLICY FOR POLICY SERVER Pc)
TRANSMITTER IP ADDRESS	138.10.0.1
DESTINATION IP ADDRESS	134.40.0.3
i	FIG.31C

DATA	(\$2 POLICY FOR POLICY SERVER Pb)
TRANSMITTER IP ADDRESS	138.10.0.1
DESTINATION IP ADDRESS	132.50.0.3
i	FIG.31D

DATA	(β 3 POLICY FOR POLICY SERVER Pa)
TRANSMITTER IP ADDRESS	138.10.0.1
DESTINATION IP ADDRESS	130.40.0.3
L G	FIG.31E

ROUTER VIRTUAL IP	494 10.0 E	-8				134.50.0.5		
ROUTER PORT IP	ADDRESS 1941001	1.0.0.1	134.20.0.1	* 134.30.0.1	134.40.0.1	134.50.0.1	134.60.0.1	134,20.0.2

FIG.32A

FIG.32B

POLICY NO.	DESTINATION IP ADDRESS	TRANSMITTER IP ADDRESS	REQUESTED BAND (bps)	POLICY DESTINATION TRANSMITTER REQUESTED RESERVATION RESERVATION SERVER NED TO START DATE END DATE SERVER REJUDITION SERVER RESERVATION	ESERVATION END DATE AND TIME	MIDDLEMAN SERVER IP ADDRESS	RECEPTION NO.	ROUTER OUTPUT IN	OUTPUT PORT NO.
-	130.10.0.2	136.10.0.1	64K	2001/9/1	2001/9/1 12:00	138.10.0.1	β1	134.10.0.5	
				CLIFF		V F V C			
ı	0	DESTINATION IP ADDRESS	A LION RESS	I KANSMI I EK IP ADDRESS	(INQUIR)	INQUIRY ABOUT ROUTER	OUTER		
_	F1G.32C	134.10.0.5	5.0.5	134.40.0.3	OUTPUT	OUTPUT PORT TO USER IP ADDRESS OF NO.1 POLICY)	SER IP OLICY)		

FIG.33A

DESTINATION IP ADDRESS

134.40.0.3

(OUTPUT PORT P10 TO USER IP ADDRESS OF NO.1 POLICY) TRANSMITTER IP ADDRESS 134,10.0.5

DATA

OUTPUT PORT Š.

ROUTER VIRTUAL ADDRESS RECEPTION ORDER ġ.

β1

138.10.0.1

POLICY DESTINATION TRANSMITTER REQUESTED RESERVATION RESERVATION IP IP BAND START DATE END DATE NO. ADDRESS (bps) AND TIME AND TIME

2001/9/1 12:00

2001/9/1 10:00

64K

136.10.0.1

130,10,0.2

1

ADDRESS

RESIDUAL LINE BAND = 1Mbps - 64Kbps = 0.936Mbps > 0

FIG.33C

SERVER IP ADDRESS

134.10.0.5

P10

MIDDLEMAN

FIG.33B

													-		
		PORT	LINE		S	e Ban	D LEF	r For	LINE BAND LEFT FOR EACH RESERVATION PERIOD (bps)	ESERV	ATION	PERIO	D(bps	(S)	
	ROUTER	Š.	ш	0-2	2-4	4-6	89	8-10	10-12	12-14	14-16	16-18	8-20	20-22	22-24
ב כ כ	8	P10	1M	1M	1M	MI	JM.	1M	0.936M	Σ	1M	1M 1M 1M 1M 1M	Σ	Σ	Σ
FIG.33D	8	P11	MI	1М	1M	1M 1M 1M 1M	Σ	≥	1M 1M 1M 1M 1M 1M	₹	Σ	M	1M	_	Σ
	2	P14	1.5M	1.5M	1.5M	1.5M 1.5M 1.5M 1.5M 1.5M	1.5M	1.5M	ı	1.5M	1.5M	1.5M	1.5M	1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M	1.5M
	25	P16	Σ	Σ	Ξ	Ψ	Ξ	Ξ	MI M	Σ	Ξ	1M	Ψ	Ξ	Σ

FIG.33E

DESTINATION TRANSMITTER IP ADDRESS (RE 138.10.0.1 134.40.0.3

(RESERVATION RESULT OF β 1 POLICY "O")

DATA

FIG.34A

			AH ICCIM
RESERVATION S	RESERVATION RESERVATION SERVER RESTART DATE END DATE ID	REQUESTED RESERVATION RESERVATION S BAND START DATE END DATE START DATE	ED RESERVATION RESERVATIO
AND TIME A	AND TIME AND TIME A	(bps) AND TIME AND TIME A	ADDRESS (bps) AND TIME AND TIME A
	AND LIME	AND TIME AND TIME A	(bbs) AND IME AND IME
AND .	START DATE END C AND TIME AND	BAND START DATE END C (bps) AND TIME AND	The BAND START DATE END I ADDRESS (bps) AND TIME AND
	START DATE AND TIME	BAND START DATE (bps) AND TIME	ADDRESS (bps) AND TIME ADDRESS (bps)

DATA	(INSTRUCTION TO	SET NO.1 POLICY)
TRANSMITTER	IP ADDRESS	134.40.0.3
DESTINATION	IP ADDRESS	134.10.0.5
	FIG 34B	<u> </u>

DATA	(COMPLETION OF SETTING	OF NO.1 POLICY)
TRANSMITTER	IP ADDRESS	134.10.0.5
DESTINATION	IP ADDRESS	134 40 0 3
	FIG 34C)

DATA	(RESERVATION RESULT	OF β 2 POLICY "O")
TRANSMITTER	IP ADDRESS	132.50.0.3
DESTINATION	IP ADDRESS	138,10.0.1
	FIG 34D	2

DATA	(RESERVATION RESULT	OF β 3 POLICY "O")	
TRANSMITTER	IP ADDRESS	130.40.0.3	
DESTINATION	IP ADDRESS	138.10.0.1	
	FIG 34F	2	

ATION LT		
RESERVATION RESULT	0 0	0
SERVER IP ADDRESS	134.40.0.3	130.40.0.3
ORDER RECEPTION NUMBER	β1 β2	β3
		
ORDER -ING NO.	α1	
INT ESS	1.0.1	
CONTENT SERVER IP ADDRESS	136.10.0.1	

DATA	(GENERAL DETERMINATION	RESULT OF α 1 POLICY "O")	
TRANSMITTER	IP ADDRESS	138.10.0.1	
DESTINATION	IP ADDRESS	136.10.0.1	
	FIG 35B		

DATA	(COMPLETION OF	RESERVATION)	
TRANSMITTER	IP ADDRESS	136.10.0.1	
DESTINATION	IP ADDRESS	130.10.0.2	

FIG.35C

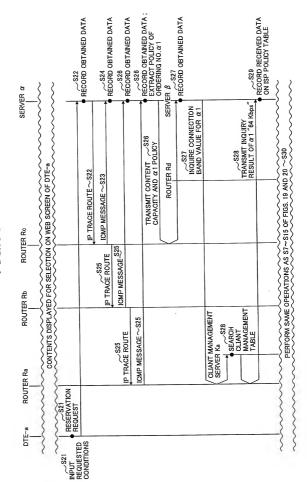


FIG.37

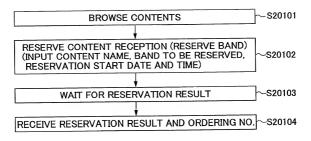
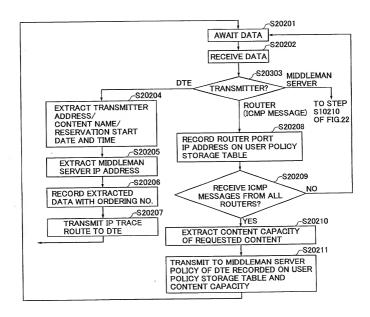


FIG.38



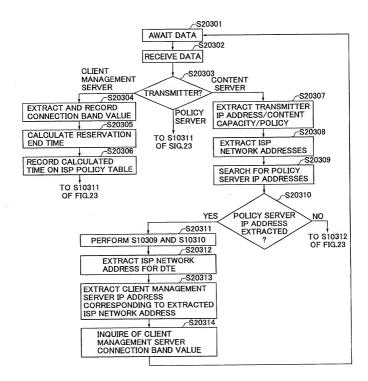


FIG.40

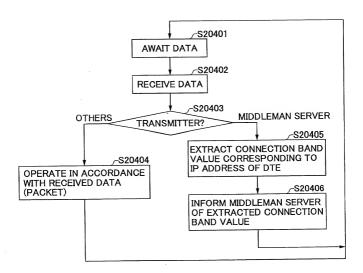


FIG.41A

USER IP ADDRESS	CONNECTION BAND (bps)
130.10.0.2	64K
130.20.0.2	128K
130.10.0.3	

FIG.41B

USER IP ADDRESS	CONNECTION BAND (bps)
132.30.0.2	128K

FIG.41C

USER IP ADDRESS	CONNECTION BAND (bps)

DATA	(REQUESTED CONDITIONS)
TRANSMITTER IP ADDRESS	130.10.0.2
DESTINATION IP ADDRESS	136.10.0.1
	FIG.42A

	MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
_		
	i	FIG.42B

ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	
S = K	
RESERVATION END DATE AND TIME	
REQUESTED RESERVATION RESEAUDES START DATE E (bps) AND TIME A	2001/9/1
REQUESTED BAND (bps)	
USER IP ADDRESS	130.10.0.2
CONTENT	CONTENT A
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
ORDERING NO.	α1
FIG.42C	



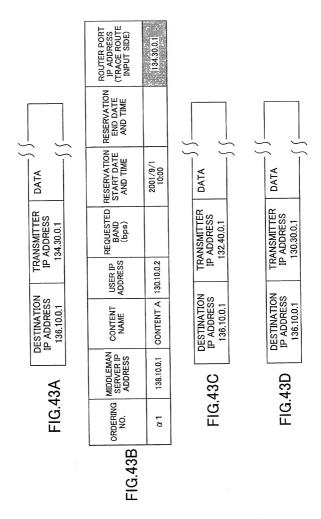


FIG.44A

ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	134.30.0.1 132.40.0.1 130.30.0.1
RESERVATION END DATE AND TIME	
REQUESTED RESERVATION RE BAND START DATE (bps) AND TIME	2000/9/1 10:00
REQUESTED BAND (bps)	
USER IP ADDRESS	130.10.0.2
CONTENT	CONTENT A 130.10.0.2
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
ORDERING NO.	α1

FIG.44B

CAPACITY (byte)	57.6M	28.8M
CONTENT NAME	* CONTENT A	CONTENT B

FIG.44C

ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	134.30.0.1 132.40.0.1 130.30.0.1
RESERVATION END DATE AND TIME	
REQUESTED RESERVATION RE BAND START DATE (bps) AND TIME	2000/9/1 10:00
REQUESTED BAND (bps)	
USER IP ADDRESS	130.10.0.2
CONTENT	CONTENT A
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
ORDERING NO.	'a'1

FIG.44D

DATA (CONTENT CAPACITY, α 1 POLICY)
DESTINATION TRANSMITTER IP ADDRESS 138.10.0.1
DESTINATION IP ADDRESS 138.10.0.1

132.40.0.1

FIG.45A

CLIENT MANAGEMENT SERVER IP ADDRESS	130.40.0.4	132,50.0.4
POLICY SERVER IP ADDRESS	130,40.0.3	132.50.0.3
NETWORK ADDRESS	* 130.0.0/9	132.0.0.0/9
		<u> </u>
	POLICY SERVER IP ADDRESS	POLICY SERVER IP ADDRESS 130.40.0.3

FIG.45B

ROUTER PORT IP ADDRESS	134.30.0.1	132.40.0.1	130.30.0.1
RESERVATION END DATE AND TIME			
CONTENT REQUESTED RESERVATION RESERVATION SERVER IP BAND START DATE END DATE ADDRESS (bps) AND TIME AND TIME	2000/9/1 10:00	2000/9/1 10:00	2000/9/1 10:00
REQUESTED BAND (bps)			
CONTENT SERVER IP ADDRESS	136.10.0.1	136.10.0.1	136.10.0.1
USER IP ADDRESS	130,10.0.2	130.10.0.2 136.10.0	130.10.0.2
POLICY SERVER IP ADDRESS	134,40.0.3 130.10.0.2	132.50.0.3	130.40.0.3
ORDER RECEPTION NO.	β1	β2	β3

FIG.45C

CONTENT SERVER IP ADDRESS	ORDERING NO.	ORDER RECEPTION NUMBER	POLICY SERVER IP ADDRESS	RESERVATION RESULT
136.10.0.1	α.1	81 82 83	134.40.0.3 132.50.0.3 130.40.0.3	

FIG.45D

г		000000		
	CLIENT MANAGEMENT SERVER IP ADDRESS	130.40.0.4	132.50.0.4	134.40.0.4
	POLICY SERVER IP ADDRESS	130.40.0.3	132.50.0.3	134.40.0.3
	NETWORK ADDRESS	130.0.0.9	132.0.0.0/9	134,0.0.0/9

FIG.45E

l l		INQUIRY ABOUT CONNECTION BAND)
DESTINATION TRANSMITTER	IP ADDRESS IP ADDRESS	138.10.0.1
DESTINATION	IP ADDRESS	130.40.0.4

FIG.46A

CONNECITON BAND	(sdq)	64K	128K	
USER IP	ADDRESS	130.10.0.2	130.20.0.2	130.10.0.3

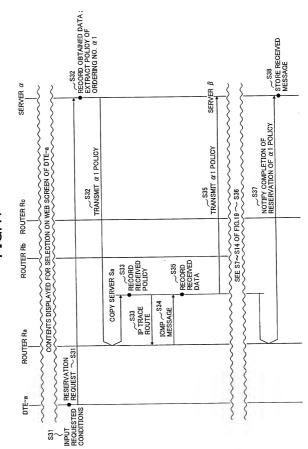
FIG.46B

DATA (ORDERING NO., CONNECTION BAND"64Kbps")	
DESTINATION TRANSMITTER IP ADDRESS 138.10.0.1 130.40.0.4	
DESTINATION IP ADDRESS 138.10.0.1	

$$FIG.46C \begin{cases} (a) & 57.6 \text{(Mbyte)} \times \frac{8 \text{ (bit)}}{64 \text{(Kbps)}} = 7,200 \text{ (sec)} \\ (b) & "2001/9/1 \text{ 10:00"} + "7,200 \text{(sec)}" \\ (c) & "2001/9/1 \text{ 12:00"} \end{cases}$$

FIG.46D

ROUTER PORT IP ADDRESS	134.30.0.1	132.40.0.1	130.30.0.1
RESERVATION END DATE AND TIME	2000/9/1 12:00	2000/9/1 12:00	2000/9/1 12:00
RESERVATION START DATE AND TIME	2000/9/1 10:00	2000/9/1 10:00	2000/9/1 10:00
REQUESTED BAND (bps)	64K	64K	64K
CONTENT SERVER IP ADDRESS	136.10.0.1	136.10.0.1	136.10.0.1
USER IP ADDRESS	130.10.0.2	130.10.0.2	130.10.0.2
POLICY SERVER IP ADDRESS	134.40.0.3	132.50.0.3	130.40.0.3
ORDER RECEPTION NO.	β1	β2	β3



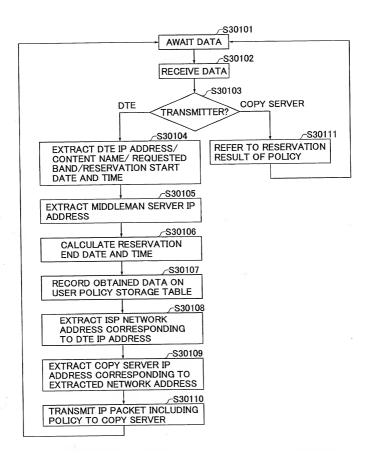


FIG.49

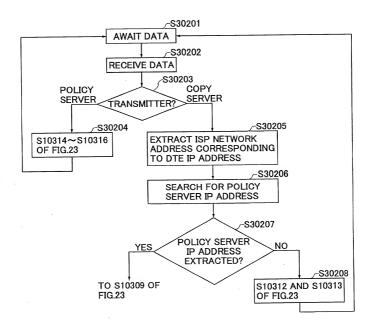


FIG.50

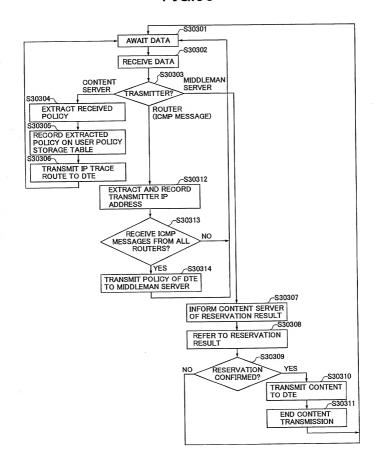


FIG.51A

	134.40.0.2	134.0.0.0/9
-	132.50.0.2	132.0.0.0/9
	130.40.0.2	130.0.0.0/9
~ ¬	COPY SERVER IP ADDRESS	NETWORK ADDRESS

FIG.51B

RESS ROUTE SIDE)	
ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	
N RESERVATION END DATE AND TIME	
REQUESTED RESERVATION BAND START DATE (bps) AND TIME	
REQUESTED BAND (bps)	
USER IP ADDRESS	
CONTENT	
MIDDLEMAN SERVER IP ADDRESS	
ORDERING NO.	

DATA (REQUESTED CONDITIONS)
TRANSMITTER IP ADDRESS 130.10.0.2
DESTINATION IP ADDRESS 136.10.0.1

FIG.53A



FIG.53B

L		7,7440,440
	CONTENT NAME	CAPACIIY (byte)
	CONTENT A	57.6M
	CONTENT B	28.8M

3.53C $\begin{cases} (a) & 57.6 \text{(Mbyte)} \times \frac{8 \text{ (bit)}}{64 \text{(Kbps)}} = 7,200 \text{ (sec)} \\ (b) & 2001/9/1 10:00" + "7,200 \text{(sec)}" \\ (c) & 2001/9/1 12:00" \end{cases}$

FIG.53D

ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	
REQUESTED RESERVATION RESERVATION BAND START DATE END DATE (bps) AND TIME AND TIME	2001/9/1 12:00
RESERVATION START DATE AND TIME	2001/9/1 10:00
REQUESTED BAND (bps)	64K
USER IP ADDRESS	130.10.0.2
CONTENT	CONTENT A
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
ORDERING NO.	α1

FIG.53E

NETWORK	COPY SERVER IP ADDRESS
130.0.0.0/9	130.40.0.2
132.0.0/9	132.50.0.2
134.0.0.0/9	134.40.0.2

FIG.53F

$\frac{DATA}{(\alpha^{1}POLICY)}$
N TRANSMITTER IP ADDRESS 136.10.0.1
DESTINATION IP ADDRESS 130.40.0.2

FIG.54A

ORDERING NO.	MIDDLEMAN SERVER IP ADDRESS	CONTENT	USER IP ADDRESS	REQUESTED BAND (bps)	REQUESTED RESERVATION RESERVATION START DATE END DATE (bps) AND TIME AND TIME	RESERVATION END DATE AND TIME	ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	
χ 1	138.10.0.1	CONTENT A	130.10.0.2	64K	2001/9/1 10:00	2001/9/1 12:00		

FIG.54B



FIG.54C

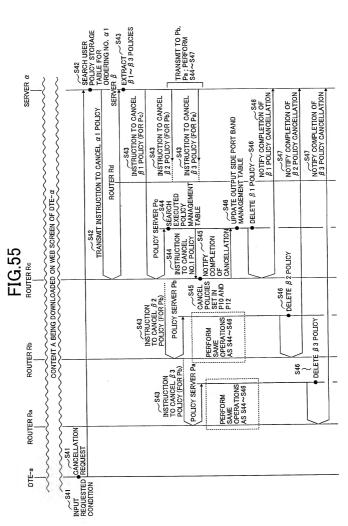


FIG.54D

VATION IP ADDRESS DATE (TRACE ROUTE TIME INPUT SIDE)	001/9/1 130.40.0.1 12:00
N RESER	2001
REQUESTED RESERVATION RESERVATION BAND START DATE END DATE (bps) AND TIME AND TIME	2001/9/1
REQUESTED BAND (bps)	64K
USER IP ADDRESS	130.10.0.2
CONTENT	CONTENT A 130.10.0.2
MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
ORDERING NO.	α1

FIG.54E

DATA (COMPLETION OF α 1 POLICY RESERVATION)	
TRANSMITTER IP ADDRESS 130.40.0.4	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 136.10.0.1	



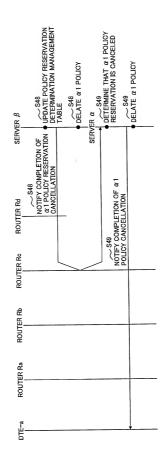
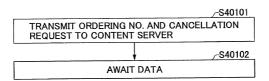
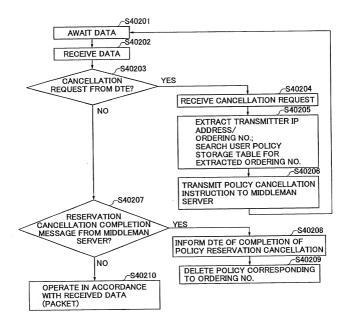
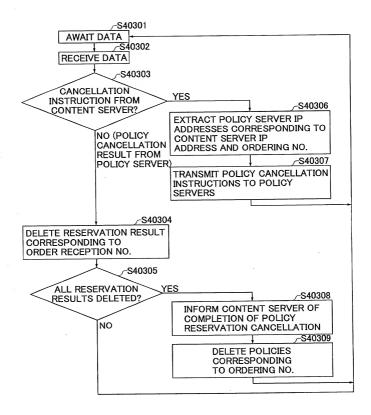


FIG.57







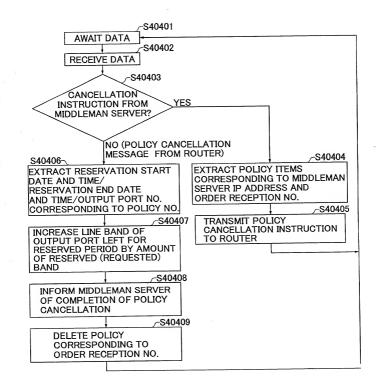
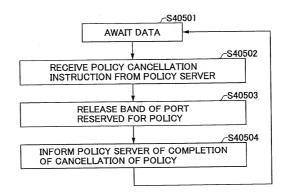


FIG.61



	2-4 4-6 6-8 8-10 10-12 12-14 14-16 16-18 18-20 20-22 22-24	1	ı
(S)	20-22	-	ı
d) Go	18-20	ı	ı
N PERI	16-18	i	ı
VATIO	14-16	i	ı
LINE BAND LEFT FOR EACH RESERVATION PERIOD(bps)	12-14	ı	ı
EACH F	10-12	i	I
FOR I	8-10	1	1
) LEFT	8-9	1	1
E BAN	4-6	ı	ı
3	2-4	ı	ı
	7	1	ı
LINE	FOR USE (bps)	1	1
PORT	9	Ā	P2
	ROUTER NO. FO	å	2 2
	<	770.01	

ROUTER PORT NO. PRICE NO.

	M 1.5M		i			
	1.5 M		 -			
	.5M 1.5		1			
	1.5M		1			
-	1.5M		1			
	1.308M		ı			
	1.5M		1			
	1.5M		1			
	1.5M		I			
	1.5M		I			
	1.5M		١			
(sda)	1.5M		1			
	P.5		Ъ			
_	슙	2	á	2		

2-4 | 4-6 | 6-8 | 8-10 | 10-12 | 12-14 | 14-16 | 16-18 | 18-20 | 20-22 | 22-24

0-2

LINE BAND FOR USE (bps)

LINE BAND LEFT FOR EACH RESERVATION PERIOD (bps)

(8)	0-2 2-4 4-6 6-8 8-10 10-12 12-14 14-16 16-18 18-20 20-22 22-24	M 1M	1M 1M	1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M	M M	
dq) QC	18-20	ΙM	1M	1.5M	Σ.	
PERIC	16-18	1M 1M 1M	Ψ	1.5M	IM IM IM IM IM	
/ATTO/	14-16	Σ	1M	1.5M	1M	
RESER!	12-14	ИI	M	1.5M		
LINE BAND LEFT FOR EACH RESERVATION PERIOD (bps)	10-12	1M 0.936M 1M 1M	M	1.5M	1M	
T FOR I	8-10	Ξ	Ξ	1.5M	₽	
D LEF	8-9	₹	Σ	1.5M	MI IM	
E BAN	4-6	M.	Σ	1.5M	₹	
Ś	2-4	H.	Ϋ́	1.5M 1.5M	MI MI	
	0-2	₽	Ξ	1.5M	≥	
LINE	FOR USE (bps)	Σ	2	1.5M	MI.	
PORT NO.		P10	<u>F</u>	P14	P16	
ROUTER		å	2 6	2	22	

FIG.62C

FIG.63A

-		
IP PORT NO.	P2	Ы
ROUTER VIRTUAL IP ADDRESS	130.10.0.5	130.10.0.5
ORDER RECEPTION NO.		ВЗ
MIDDLEMAN SERVER IP ADDRESS		138.10.0.1
POLICY DESTINATION TRANSMITTER REQUESTED RESERVATION RESERVATION IMDDLEMAN ORDER ROUTER RECEIVED VIETNALING IN ADDRESS (4.6.9) AND TIME AND TIME IN ADDRESS NO. ADDRESS NO. ADDRESS NO. ADDRESS NO.	2001/9/1 12:00	2001/9/1 12:00
RESERVATION START DATE AND TIME	2001/9/1 10:00	2001/9/1 10:00
REQUESTED BAND (bps)	128K	64K
OLICY DESTINATION TRANSMITTER NO. IP ADDRESS	132.30.0.2	136.10.0.1
DESTINATION IP ADDRESS	130.20.0.2	130.10.0.2
POLICY NO.	-	2

FIG.63B

OUTPUT PORT NO.	P6	P5
ROUTER VIRTUAL IP ADDRESS	132.10.0.5	132.10.0.5
ORDER RECEPTION NO.		β2
MIDDLEMAN ORDER SERVER RECEPTION IP ADDRESS NO.		138.10.0.1
RESERVATION MIDDLEMAN END DATE SERVER IN ADDRESS	2001/9/1 12:00	2001/9/1 12:00
R REQUESTED RESERVATION START DATE (bps) AND TIME	2001/9/1 10:00	2001/9/1
REQUESTED BAND (bps)	128K	64K
POLICY DESTINATION TRANSMITTER RE NO. IP ADDRESS IP ADDRESS	130.20.0.2	136.10.0.1
DESTINATION IP ADDRESS	132.30.0.2	130.10.0.2
POLICY NO.	-	2

FIG.63C

OUTPUT PORT NO	P10
VIRTUAL IP PORT NO.	134.10.0.5
ORDER RECEPTION NO.	β1
MIDDLEMAN ORDER SERVER RECEPTION IP ADDRESS NO.	138.10.0.1
RESERVATION END DATE AND TIME	2001/9/1 12:00
RESERVATION START DATE AND TIME	2001/9/1 10:00
REQUESTED BAND (bos)	64K
POLICY DESTINATION TRANSMITTER NO. IP ADDRESS	136.10.0.1
DESTINATION TI	130.10.0.2
POLICY NO.	-

FIG.64A

DATA (CANCELLATION OF α 1 POLICY)	
TRANSMITTER IP ADDRESS 130.10.0.2	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 136.10.0.1 130.10.0.2	

FIG.64B

ORDERING MIDDLEMAN CONTENT USER IP REQUESTED RESERVATION RESERVATION RESERVATION PADDRESS START DATE CONTENT A 130.10.0.2 64K 2000/9/1 12.00 132.40.0.1 ADDRESS ADDRESS CONTENT A 130.10.0.2 64K 2000/9/1 12.00 132.40.0.1	-								
CONTENT A 130.10.0.2 64K 2000/9/1 2001/9/1 12:00 12:00	ō	RDERING NO.	MIDDLEMAN SERVER IP ADDRESS	CONTENT	USER IP ADDRESS	REQUESTED BAND (bps)	RESERVATION START DATE AND TIME	RESERVATION END DATE AND TIME	ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)
00:01	-	0.1	138.10.0.1	CONTENT A	130.10.0.2	64K	2000/9/1	2001/9/1	134.30.0.1
130,30,0.1							10:00	15:00	132.40.0.1
									130.30.0.1

FIG.64C

DATA (CANCELLATION OF $lpha$ 1 POLICY)
TRANSMITTER IP ADDRESS 136.10.0.1
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 138.10.0.1

FIG.65A

RESERVATION RESULT	0	0	0
POLICY SERVER IP ADDRESS	134.40.0.3	132,50.0.3	130.40.0.3
ORDER RECEPTION NUMBER	β1	82	ВЗ
ORDERING RI	:α1		
CONTENT SERVER IP ADDRESS	136.10.0.1		

FIG.65B

DATA DATA (INSTRUCTION TO CANCEL β 1 POLICY FOR POLICY SERVER Pc)	
DESTINATION TRANSMITTER IP ADDRESS 134.40.0.3 138.10.0.1	
DESTINATION IP ADDRESS 134.40.0.3	

FIG.65C

(INST	
DESTINATION TRANSMITTER IP ADDRESS 132.50.0.3 138.10.0.1	
DESTINATION IP ADDRESS 132.50.0.3	

S (INSTRUCTION TO CANCEL \$2 POLICY FOR POLICY SERVER Pb)

FIG.65D

DATA (INSTRUCTION TO CANCEL β 3 POLICY FOR POLICY SERVER P_a)	
DESTINATION TRANSMITTER IP ADDRESS 130.40.0.3 138.10.0.1	
DESTINATION IP ADDRESS 130.40.0.3	

FIG.66A

	OUTPUT PORT NO.		P10
C.L.	VIRTUAL IP	ADDRESS	134,10.0.5
-	RECEPTION	Ö.	β1
	MIDDLEMAN	IP ADDRESS	138.10.0.1
	RESERVATION END DATE	AND TIME	2001/9/1 12:00
	RESERVATION START DATE	AND TIME	2001/9/1 10:00
	REQUESTED	(pbs)	64K
	TRANSMITTER	IP ADDRESS	136.10.0.1
	OLICY DESTINATION	IP ADDRESS	130.10.0.2
	POLICY	Š.	-

FIG.66B

DESTINATION TRANSMITTER DATA IP ADDRESS IP ADDRESS (INSTRUCTION TO CANCEL NO.1 POLICY) 134,100,5 134,40,0,3	
TRANSMITTER IP ADDRESS 134.40.0.3	
DESTINATION TRANSMITTER IP ADDRESS (PADDRESS (134.10.0.5 134.40.0.3	

FIG.66C

DATA (COMPLETION OF NO.1 POLICY CANCELLATION)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 134.40.0.5	
DESTINATION IP ADDRESS 134.40.0.3	

FIG.67A

_		
	OUTPUT PORT NO.	P10
BOLITER	VIRTUAL IP ADDRESS	134.10.0.5
ODUCO	RECEPTION NO.	β1
MANUEL PATANI	MIDDLEMAN SERVER IP ADDRESS	138.10.0.1
INCITAL GARAGES	RESERVATION END DATE AND TIME	2001/9/1 12:00
	RESERVATION START DATE AND TIME	2001/9/1 10:00
	REQUESTED BAND (bos)	64K
	TRANSMITTER IP ADDRESS	136.10.0.1
	DESTINATION IP ADDRESS	130.10.02
	POLICY NO.	-

FIG.67B

RESIDUAL LINE BAND=0.936Mbps+64Kbps =1Mbps

FIG.67C

					1			1	1	17.44	270	1001	1	
PORT	PORT	_		_	¥	MAND		LINE BAND LEFT FOR EACH RESERVATION PERIOD (0PS)	H KES	-KVAII	ON PER	dOD (of)si	
KOOLEK	Ö.	FOR USE (bps)	0-2	2-4	4-6	8-9	8-10	0-2 2-4 4-6 6-8 8-10 10-12 12-14 14-16 16-18 18-20 20-22 22-24	12-14	14-16	16-18	18-20	20-22	22-24
Re	₹ P10	Σ	₹	Ξ	Σ	MI MI MI	Ξ	IM.	Σ	M	Ξ	Σ	Σ	Σ
Re	P11	M	₹	₹	Σ	Σ	MI MI MI MI	Σ	Σ	M	1M	M	Ψ	Σ
Rd	P14	1.5M	1.5M	1.5M	1.5M	1.5M	1.5M	1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M 1.5M	1.5M	1.5M	1.5M	1.5M	1.5M	1.5M
Rd	P16	MI	Ξ	Σ	Σ	Σ	MI MI MI	M	M	1M 1M	Ψ	Ψ	Σ	Σ
		1												

FIG.67D

(COMPLE RESERVA	
DESTINATION TRANSMITTER IP ADDRESS 178.10.0.1 134.40.0.3	
DESTINATION IP ADDRESS 138.10.0.1	

FIG.67E

OUTPUT PORT NO.	94
VIRTUAL IP ADDRESS	134.10.0.5
ORDER RECEPTION NO.	6
MIDDLEMAN SERVER IP ADDRESS	138 10.0.1
RESERVATION END DATE AND TIME	2001/9/1 12:00
RESERVATION START DATE	2001/9/1
REQUESTED BAND	(ups)
TRANSMITTER IP ADDRESS	136.10.0.1
DESTINATION ID ADDRESS	130.10.0.2
POLICY	

FIG.68A

DATA (COMPLETION OF β2 POLICY RESERVATION CANCELLATION)	
DESTINATION TRANSMITTER IP ADDRESS 138.10.0.1	
DESTINATION IP ADDRESS 138.10.0.1	

FIG.68B

DATA (COMPLETION OF β 3 POLICY RESERVATION CANCELLATION)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 138.10.0.1	
DESTINATION IP ADDRESS 138.10.0.1	

FIG.68C

RESERVATION RESULT	
RESE	
POLICY SERVER IP ADDRESS	134.40.0.3 132.50.0.3 130.40.0.3
ORDER RECEPTION NUMBER	β1 β2 β3
CONTENT SERVER IP ADDRESS	136.10.0.1
ORDERING NO.	. a 1

FIG.68D

MITTER	IP ADDRESS (CC	138.10.0.1 RES
TRANSMITTER	IP AD	138.1
DESTINATION	IP ADDRESS	136.10.0.1

DATA
OMPLETION OF \$\alpha\$1 POLICY
SERVATION CANCELLATION)

FIG.68E

RESERVATION RESULT						
POLICY SERVER IP ADDRESS	124 4002	0.0.01.10	129 50 0 2	0.00.00	120 400 2	0.0.00
ORDER RECEPTION NUMBER	0.1	١ ط	0.0	7 0	00	2
CONTENT SERVER IP ADDRESS	, 00, 00,	1.0.01.061				
ORDERING NO.	1	3				
	Γ,	t		L		

FIG.69A

DATA (COMPLETION OF α 1 POLICY CANCELLATION)
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 130.10.0.1
DESTINATION IP ADDRESS 130.10.0.2

FIG.69B

	_	7		_	\neg	-
ROUTER PORT IP ADDRESS (TRACE ROUTE INPUT SIDE)	134 30 0 1		122 40.0.1	1.02.11.20.1	120 20 0 1	1.000001
REQUESTED RESERVATION RESERVATION SAND TARE (bps) AND TIME AND TIME						
RESERVATION START DATE AND TIME						
REQUESTED BAND (bps)	BAK					
USER IP ADDRESS	120 100 2	3.0.01.001				
CONTENT	A TINETINGO	THE PARTY OF				
ORDERING SERVER IP ADDRESS	130 1001	1.0.01.00				
ORDERING NO.						

FIG.70A

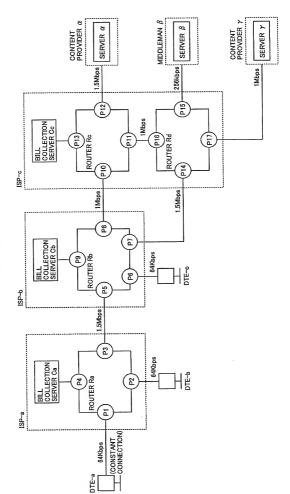
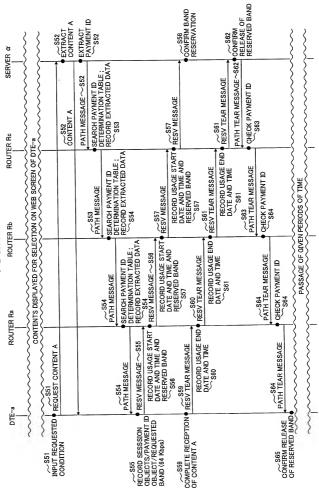
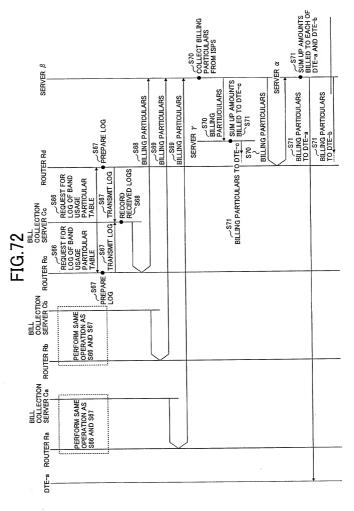


FIG.70B

IP ADDRESS	SS	ISP-a	PORT	PORT IP ADDRESS	ISP-b	PORT	PORT IP ADDRESS	ISP-c	PORT	PORT IP ADDRESS
130.10.0	12	130,10,0.2 ROUTER Ra	<u>e</u>	·	130.10.0.1 ROUTER Rb	P5	132.10.0.1	132.10.0.1 ROUTER Rc	P10	134.10.0.1
130.20.0.2	2		P2	_		9d	132.20.0.1		P11	134.20.0.1
132,20,0,2	0.2		P3	130.30.0.1		P7	132,30.0.1		P12	134.30.0.1
136.10.0.1	1-0		P4	130.40.0.1		P8	132.40.0.1		P13	134.40.0.1
138.10.0.1	10	SERVER Ca	1	130.40.0.2		P9	132.50.0.1	132.50.0.1 ROUTER Rd	P14	134.50.0.1
140.10.0.1	1				SERVER Cb	-	132.50.0.2		P15	134.60.0.1
									P16	134.20.0.2
									P17	134.70.0.2
	l							SERVER Co	-	134.40.0.2





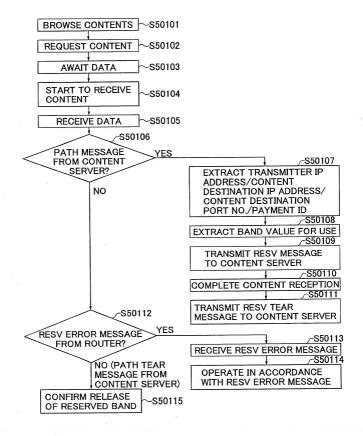
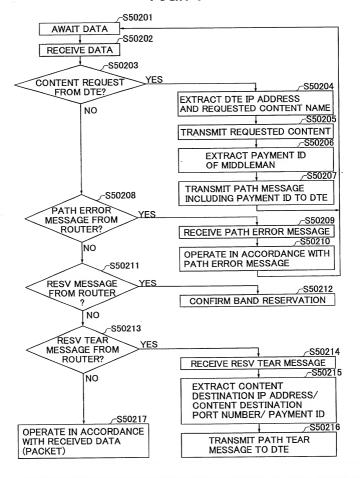


FIG.74



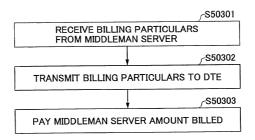


FIG.76

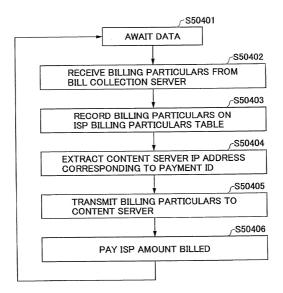
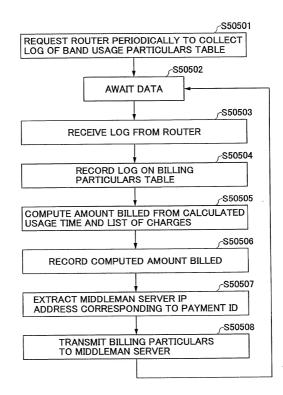
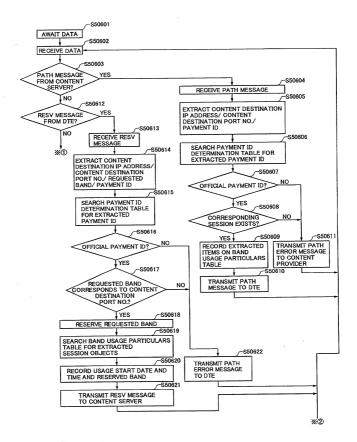


FIG.77





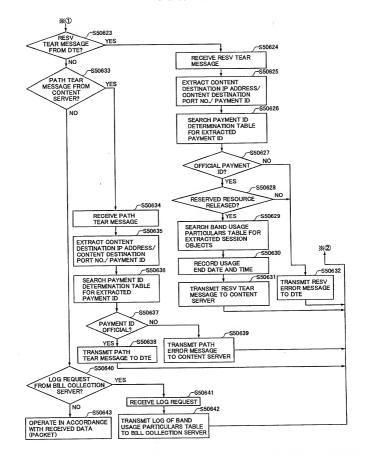


FIG.80A

PAYMENT ID β 1

FIG.80B
PAYMENT ID
82

FIG.81A

CONTENT SERVER IP ADDRESS 136.10.0.1	136.10.0.1
PAYMENT ID	β1 82

FIG.81B

ISP SERVER IP ADDRESS	
USAGE END DATE AND TIME	
USAGE START USAGE END DATE AND DATE AND TIME TIME	
RESERVED BAND (bps)	
DESTINATION PORT NO.	
PAYMENT DESTINATION DESTINATION ID IP ADDRESS PORT NO.	
PAYMENT ID	
AMOUNT BILLED (YEN)	

FIG.82A

MIDDLEMAN SERVER IP ADDRESS	138.10.0.1	138.10.0.1
PAYMENT ID	β1	β2

FIG.82B

AMOUNT P BILLED (YEN)	AYMENT ID	DESTINATION IP ADDRESS	PAYMENT DESTINATION DESTINATION ID ADDRESS PORT NO.	RESERVED BAND (bps)	USAGE START USAGE END DATE AND DATE AND TIME TIME	USAGE END DATE AND TIME

FIG.83A

λ β 1 β 2			
PA	PAYMENT ID	β1	β2

FIG.83B

				10 10	LO
i	10000	NO.	RESERVED	USAGE START	USAGE END
<u>ۃ</u> :	SINALION	DESTINATION DESTINATION	BAND	DATE AND	≾
≒	IP ADDRESS	POR NO.	(pbs)	TIME	TIME
		i	2770	2001/9/1	2001/9/1
	130.20.0.2	P2	04K	00:6	11:00

FIG.83C

USAGE END DATE AND TIME	2001/9/1 11:00	2001/9/1 12:00
USAGE START DATE AND TIME	2001/9/1 9:00	2001/9/1 9:00
RESERVED BAND (bps)	64K	64K
DESTINATION DESTINATION IP ADDRESS PORT NO.	P2	P6
DESTINATION IP ADDRESS	130.20.0.2	132.20.0.2
PAYMENT ID	β1	β2

FIG.83D

USAGE END DATE AND TIME	2001/9/1
USAGE START DATE AND TIME	2001/9/1 9:00
RESERVED BAND (bps)	64K
DESTINATION PORT NO.	P2
DESTINATION DESTINATION IP ADDRESS PORT NO.	130.20.0.2
PAYMENT ID	β1

FIG.83E

USAGE END DATE AND TIME	2001/9/1 12:00
USAGE START UDATE AND TIME	2001/9/1 9:00
RESERVED BAND (bps)	64K
DESTINATION DESTINATION IP ADDRESS PORT NO.	P6
DESTINATION IP ADDRESS	132.20.0.2
PAYMENT ID	β2

FIG.84A

DATA (REQUESTED CONDITION)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 136.10.0.1	
DESTINATION IP ADDRESS 136.10.0.1	

FIG.84B

DATA (CONTENT A)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 130.10.0.1	
DESTINATION IP ADDRESS 130.10.0.2	

FIG.84C



FIG.84D



FIG.85A



FIG.85B

	-				
PAYMENT ID	DESTINATION IP ADDRESS	DESTINATION DESTINATION IP ADDRESS PORT NO.	RESERVED BAND (bps)	USAGE START I DATE AND TIME	USAGE END DATE AND TIME
-	130.20.0.2	P2	64K	2001/9/1 9:00	2001/9/1 11:00
1	130.10.0.2	F1			

FIG.85C



FIG.86A



FIG.86B





FIG.88A PAYMENT ID R 1

FIG.88B

PAYMENT ID	DESTINATION DESTINATION IP ADDRESS PORT NO.	DESTINATION PORT NO.	RESERVED BAND (bps)	USAGE START DATE AND TIME	USAGE END DATE AND TIME
1.2	130.20.0.2	P2	64K	2001/9/1 9:00	2001/9/1 11:00
3.1	130.10.0.2	.p1	64K	2001/9/1 10:00	

FIG.88C



FIG.89A



FIG.89B



FIG.89C



FIG.90A



FIG.90B

	USAGE END DATE AND TIME	2001/9/1 11:00	2001/9/1 12:00
	USAGE START UDATE AND TIME	2001/9/1 9:00	2001/9/1
	RESERVED BAND (bps)	64K	64K
_	DESTINATION PORT NO.	P2	P1
_	DESTINATION IP ADDRESS	130.20.0.2	130.10.0.2
	PAYMENT ID	β1	β1

FIG.90C



FIG.91A

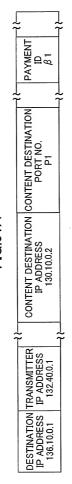


FIG.91B



FIG.91C





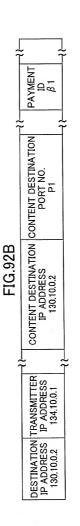


FIG.92C



FIG.92D



FIG.93A

DESTINATION TRANSMITTER
IP ADDRESS IP ADDRESS
134.40.0.1 134.40.0.2

DATA (REQUEST FOR LOG OF BAND USAGE PARTICULARS TABLE)

FIG.93B

DATA (REQUEST FOR LOG OF BAND USAGE PARTICULARS TABLE) TRANSMITTER IP ADDRESS 134.40.0.2 DESTINATION IP ADDRESS 134.20.0.2

FIG.93C

DATA (LOG OF BAND USAGE PARTICULARS TABLE)	
TRANSMITTER IP ADDRESS 134.40.0.1	
DESTINATION IP ADDRESS 134.40.0.2	

FIG.93D

DATA (LOG OF BAND USAGE PARTICULARS TABLE)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 134.40.0.2	
DESTINATION IP ADDRESS 134.40.0.2	

FIG.94A

	2001/9/1 11:00 2001/9/1 12:00 2001/9/1 12:00
USAGE START DATE AND TIME	2001/9/1 9:00 2001/9/1 10:00 2001/9/1 9:00
RESERVED BAND (bps)	64K 64K 64K
DESTINATION PORT NO.	P2 P1 P6
DESTINATION IP ADDRESS	130,20,02 130,10,02 132,20,02
PAYMENT ID	β1 β1 β2
AMOUNT	aaa bbb

FIG.94B

_	DAVMENT ID	MIDDLEMEN SERVER
	3	IP ADDRESS
	A 1	138 10.0 1
	10	
	β2	138.10.0.1

FIG.94C

DATA (BILLING PARTICULARS)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 138.10.0.1	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 138.10.0.1 134.40.0.2	

FIG.94D

DATA (BILLING PARTICULARS)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 138.10.0.1	
DESTINATION IP ADDRESS 138.10.0.1	

FIG.94E

DATA (BILLING PARTICULARS)	
DESTINATION TRANSMITTER IP ADDRESS 130.40.0.1	
DESTINATION IP ADDRESS 138.10.0.1	

FIG.95A

ISP SERVER IP ADDRESS	134.40.0.2	134.40.0.2	134.40.0.2	132.50.0.2	132.50,0,2	132.50.0.2	130.40.0.2	130.40.0.2
USAGE END DATE AND TIME	2001/9/1 11:00	2001/9/1 12:00	2001/9/1 12:00	2001/9/1 11:00	2001/9/1 12:00	2001/9/1 12:00	2001/9/1 11:00	2001/9/1 12:00
USAGE START DATE AND TIME	2001/9/1 9:00	2001/9/1 10:00	2001/9/1 9:00	2001/9/1 9:00	2001/9/1 9:00	2001/9/1 10:00	2001/9/1 9:00	2001/9/1 10:00
RESERVED BAND (bps)	64K							
DESTINATION PORT NO.	P2	P1	94	P2	9d	FI.	P2	Ы
DESTINATION IP ADDRESS	130.20.0.2	130.10.02	132.20.0.2	130.20.0.2	132.20.0.2	130.10.0.2	130.20.0.2	130.10.0.2
PAYMENT ID	B1.	β1	82	β.1	β2	β1	В1	β1
AMOUNT BILLED (YEN)	aaa	qqq	000	ppp	999	ŧ	888	hhh

FIG.95B

	CONTENT SERVER IP ADDRESS	136.10.0.1 140.10.0.1
5		
	PAYMENT ID	β1 β2
_		(2000) (C. C. C

FIG.95C

DATA (BILLING PARTICULARS)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 136.10.0.1	
DESTINATION IP ADDRESS 136.10.0.1	

FIG.95D

DATA (BILLING PARTICULARS)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 140.10.0.1	
DESTINATION IP ADDRESS 140.10.0.1	

FIG.96A

DATA (BILLING PARTICULARS)	
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 130.10.0.2	
DESTINATION IP ADDRESS 130.10.0.2	

FIG.96B

AITTER RESS 0.0.1
TRANSMITTER IP ADDRESS 136.10.0.1
DESTINATION IP ADDRESS 130.20.0.2

DATA
(BILLING PARTICULARS)

FIG.96C

DATA (BILLING PARTICULARS)
DESTINATION TRANSMITTER IP ADDRESS IP ADDRESS 132.20.0.2
DESTINATION IP ADDRESS 132.20.0.2